WHAT IS CLAIMED IS:

1. A numerically controlled curved-surface machining unit equipped with three linearly moving axes and, at least, one rotary axis, including a simultaneous multiple-axis control NC machine numerically controlled by a numerical control unit with a numerical control NURBS interpolation function, comprising:

component converting matrix•angle-addition value forming means for converting CL (cutter location) data composed of tool control point vector data and tool axis vector data, calculated along a machining direction on a workpiece coordinate system on which a curved surface is defined by a host computer into components on a normal coordinate system for operating said simultaneous multiple-axis control NC machine on the basis of the machine configuration of said simultaneous multiple-axis control NC machine;

component converting means for converting from the workpiece coordinate system to the normal coordinate system;

second angle forming means for forming second angles of a second rotary axis on the normal coordinate system;

second angle compensating means for forming a continuous angle distribution from a distribution of the second angles;

first angle forming means for forming first angles of a first rotary axis on a coordinate system rotated by the second angles at the second rotary axis;

first angle compensating means for forming a continuous angle distribution from a distribution of the first angles;

machine coordinate transformation matrix forming means for obtaining a matrix for converting the tool control point vectors on the workpiece coordinate system into a machine coordinate system by using said first angles and said second angles;

machine coordinate converting means for converting the tool control point vectors into the machine coordinate system by using said machine coordinate transforming matrix;

means for converting data on the machine coordinate system to NC data; and

means for transmitting said NC data to said numerical control unit.

2. A numerically controlled curved-surface machining unit according to claim 1, wherein said component converting matrix · angle addition value forming means reads, as said machine configuration, data relating to the first rotary axis, the second rotary axis, a tool axis and a master axis and forms a component converting matrix converting components to the normal coordinate system, axis conversion matrix and angle addition values, and said component converting means converts the tool axis vectors into normal coordinate system components by using the component converting matrix, the axis converting matrix and the angle addition values.

3. A numerically controlled curved-surface machining unit according to claim 1, wherein said second angle compensating means sets an identifier by detecting the condition that both vectors for obtaining angles become 0, obtains a difference value of adjacent angles, forms another difference value using the difference value of adjacent angles in the case where any angle is not obtained by said identifier, detect, when said difference value is larger than π, a minimum value from said difference value, said difference value + π, said difference value - π, said difference value + 2π, and said difference value - 2π to set the minimum difference value as a new difference value, and obtains the second angle by adding the difference value to an angle of a

start point.

4. A numerically controlled curved-surface machining unit according to claim 3, wherein said first angle compensating means detects, when said difference value is larger than π, a minimum value from said difference value, said difference value + 2π and said difference value - 2π to set the minimum difference value as a new difference value, and obtains the first angle by adding the difference value to the angle of start point.

5. A numerically controlled curved-surface machining unit according to any one of claims 1 to 4, wherein said first angle forming means forms a reference direction vector of said first angle by using said second angle, and obtains the first angle the start of which is said reference vector.

6. A numerically controlled curved-surface machining unit equipped with three linearly moving axes and, at least, one rotary axis, including a simultaneous multiple-axis control NC machine numerically controlled by a numerical control unit with a numerical control NURBS interpolation function, comprising:

means for reading, as CL (cutter location) data, tool control point vector data and tool axis vector data, calculated along a machining direction on a workpiece coordinate system on which a curved surface is defined by a host computer, and feed rates on the workpiece coordinate system, and converting the CL data into position vectors of three linear axes on a machine coordinate system, rotation angles and feed rates on the machine coordinate system to operate said simultaneous multiple-axis control NC machine on the basis of the machine configuration of said simultaneous

multiple-axis control NC machine;

means for forming at least one NURBS curve having continuos curvature by compensating a NURBS curve or adding thereto a NURBS curve so that rotation angles change continuously at the connecting portions of a plurality of NC data that the position vectors and the rotation angles on the machine coordinate system are interpolated by NURBS curve;

means for calculating knot vectors of an optimum distance of the NURBS curve on the basis of the position vectors of three linear axes and rotation angles, calculated on the machine coordinate system;

means for calculating each of the three linear axes on the machine coordinate system and a NURBS curve of the rotary axis by using said knot vectors ;

means for converting said NURBS curve into NC data for NURBS interpolation ;

means for converting feed rates on the workpiece coordinate system into feed rates on the machine coordinate system;

means for converting the data on the machine coordinate system into NC data; and

means for transmitting the obtained NC data to said numerical control unit.

7. A numerically controlled curved-surface machining unit according to claim 6, further comprising:

means for forming the NURBS so that rotation quantities continuously change on an indefinite plane by developing the rotation quantities of the rotary axis on the indefinite plane.

8. A numerically controlled curved-surface machining unit according to claim 7, further comprising:

means for determining segment division positions of the NURBS curve on the basis of the rotation quantity information of the CL data developed on the indefinite plane.